AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of fabricating a magnetic memory cell, comprising:

providing a substrate on which the magnetic memory cell is formed;

depositing a first ferromagnetic layer;

depositing a dielectric layer over the first ferromagnetic layer; and

depositing a second ferromagnetic layer over the dielectric layer, wherein depositing at ~~lease~~ least one of the first or second ferromagnetic layers comprises:

depositing a metal oxide by multiple ALD cycles, wherein the metal oxide is not reduced to ~~element~~ elemental metal in each ALD cycle; and

after completing the multiple ALD cycles, subsequently reducing the metal oxide to elemental metal.

2. (Original) The method of Claim 1, wherein the magnetic memory cell comprises a magnetic tunneling junction (MTJ).

3. (Original) The method of Claim 1, wherein the magnetic memory cell is a magnetic random access memory cell.

4. (Original) The method of Claim 1, wherein the dielectric layer is deposited by ALD.

5. (Original) The method of Claim 1, wherein the dielectric layer comprises aluminum oxide.

6. (Original) The method of Claim 1, wherein the first ferromagnetic layer is deposited by ALD.

7. (Original) The method of Claim 6, wherein depositing the first ferromagnetic layer by ALD comprises depositing a metal oxide by ALD and subsequently reducing the metal oxide to elemental metal.

8. (Previously Presented) The method of Claim 7, wherein the elemental metal comprises cobalt.

9. (Original) The method of Claim 1, wherein depositing the second ferromagnetic layer comprises an ALD process.

10. (Original) The method of Claim 9, wherein depositing the second ferromagnetic layer comprises depositing a metal oxide by ALD and subsequently reducing the metal oxide to elemental metal.

11. (Original) The method of Claim 10, wherein the elemental metal comprises cobalt.

12. (Original) The method of Claim 1, wherein the first ferromagnetic layer has a lower magnetic permeability than the second ferromagnetic layer.

13. (Original) The method of Claim 1, wherein the first ferromagnetic layer is thinner than the second ferromagnetic layer.

14. (Currently Amended) A method of fabricating a magnetic memory cell, comprising:

providing a substrate on which the magnetic memory cell is formed;

depositing a first magnetic layer on the substrate;

forming a dielectric layer over the first magnetic layer;

depositing a metal oxide layer comprising a magnetic metal over the dielectric layer by multiple atomic layer deposition (ALD) cycles, wherein the metal oxide is not reduced to ~~element~~ elemental metal in each ALD cycle; and

after completing the multiple ALD cycles, reducing the metal oxide layer to a magnetic elemental metal layer.

15. (Currently Amended) A method of fabricating a magnetic memory cell, comprising:

providing a substrate on which the magnetic memory cell is formed;

forming a first magnetic layer on the substrate;

depositing a first non-magnetic metal oxide layer over the first magnetic layer;

converting the first non-magnetic metal oxide layer to a first non-magnetic metal layer;

depositing an insulating layer on the first non-magnetic metal layer;

depositing a second non-magnetic metal oxide layer by multiple atomic layer deposition (ALD) cycles, wherein the metal oxide is not reduced to ~~element~~ elemental metal in each ALD cycle;

after the multiple ALD cycles, converting the second non-magnetic metal oxide layer to a second non-magnetic metal layer; and

depositing a second magnetic layer on the second non-magnetic metal layer.

16. (Original) The method of Claim 15, wherein the first non-magnetic metal oxide layer is deposited by ALD.

17. (Original) The method of Claim 15, wherein the first non-magnetic metal oxide layer and the second non-magnetic metal oxide layer are converted to the first and second non-magnetic metal layers by reducing the metal oxide to elemental metal.

18. (Original) The method of Claim 17, wherein reducing comprises exposing the metal oxide layer to a chemical selected from the group consisting of hydrogen, hydrogen-rich radicals, carbon monoxide, alcohol vapor, aldehyde vapor and carboxylic acid vapor.

19. (Original) The method of Claim 15, wherein the first and the second non-magnetic metal oxide layers comprise copper oxide.

20. (Currently Amended) A method of fabricating a magnetic nanolaminate structure, comprising:

depositing a plurality of metal oxide layers on a substrate by multiple atomic layer deposition (ALD) cycles, wherein the metal oxide layers are not reduced to ~~element~~ elemental metal in each ALD cycle, and wherein at least two of the metal oxide layers differ in composition; and

after the multiple ALD cycles, subsequently converting at least one of the plurality of metal oxide layers to an elemental metal ~~layers~~ layer, wherein at least one of the metal oxide and elemental metal layers is magnetic.

21. (Original) The method of Claim 20, wherein the magnetic nanolaminate structure is part of a magnetic memory device.

22. (Original) The method of Claim 20, wherein the magnetic nanolaminate structure is part of a read-head.

23. (Original) The method of Claim 20, wherein the magnetic nanolaminate structure comprises a magnetic tunneling junction.

24. (Original) The method of Claim 20, wherein the magnetic nanolaminate structure is part of a spin valve transistor.

25. (Previously Presented) The method of Claim 20, wherein depositing the plurality of metal oxide layers comprises, in order: depositing a first metal oxide layer, depositing an insulating layer, and depositing a second metal oxide layer, wherein each of the first and second metal oxide layers either comprises a magnetic metal or is a magnetic oxide.

26. (Previously Presented) The method of Claim 20, wherein depositing the plurality of metal oxide layers comprises, in order: depositing a first metal oxide layer, depositing a first non-magnetic metal oxide layer, depositing an insulating layer, depositing a second non-magnetic metal oxide layer, and depositing a second metal oxide layer, wherein each of the first and second metal oxide layers either comprises a magnetic metal or is a magnetic oxide.

27. (Original) The method of Claim 20, wherein converting comprises reducing a metal oxide layer to elemental metal.

28. (Original) The method of Claim 27, wherein reducing comprises contacting the layer with a compound selected from the group consisting of hydrogen, hydrogen-rich radicals, carbon monoxide, alcohol vapor, aldehyde vapor and carboxylic acid vapor.

29. (Original) The method of Claim 20, wherein at least one of the metal oxide layers comprises a ferromagnetic oxide selected from the group consisting of magnetite (Fe_3O_4), CrO_2, manganite perovskites doped with alkaline earth metals and metal oxide superlattices.

30. (Original) The method of Claim 20, wherein the magnetic nanolaminate comprises at least one magnetic metal selected from the group consisting of iron (Fe), cobalt (Co) and nickel (Ni).

31. (Original) The method of Claim 20, wherein the magnetic nanolaminate comprises at least one non-magnetic metal.

32. (Original) The method of Claim 31, wherein the non-magnetic metal is copper.

33. – 45. (Cancelled)

46. (Previously Presented) A method of fabricating a sensing element of a read-head comprising:

providing a substrate on which the sensing element is to be formed;

depositing a first ferromagnetic layer by an atomic layer deposition (ALD) process comprising:

depositing a metal oxide by multiple ALD cycles, wherein the metal oxide is not reduced to elemental metal in each ALD cycle, and

after completing the multiple ALD cycles, subsequently reducing the metal oxide to elemental metal to form the first ferromagnetic layer;

depositing a conductive layer over the first ferromagnetic layer; and

depositing a second ferromagnetic layer over the conductive layer.

47. (Original) The method of Claim 46, wherein the conductive layer is deposited by atomic layer deposition.

48. (Original) The method of Claim 46, wherein the second ferromagnetic layer is deposited by atomic layer deposition.

49. (Original) The method of Claim 46, wherein the first ferromagnetic layer comprises NiFe and the second ferromagnetic layer comprises Co.

50. (Original) The method of Claim 46, wherein the conductive layer comprises Cu.

51. (Cancelled)

52. (Previously Presented) A method of fabricating a magnetic memory cell, comprising:

providing a substrate on which the magnetic memory cell is formed;

depositing a first ferromagnetic layer;

depositing a dielectric layer over the first ferromagnetic layer; and

depositing a second ferromagnetic layer over the dielectric layer, wherein depositing at least one of the first or second ferromagnetic layers comprises:

depositing a metal oxide by multiple ALD cycles, wherein the metal oxide is not reduced to elemental metal in each ALD cycle; and

after completing the multiple ALD cycles, subsequently reducing the metal oxide to elemental metal.

53. (Previously Presented) The method of Claim 52, wherein the elemental metal comprises cobalt.